

CLAIMS

We claim:

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1. A apparatus comprising:
a substrate having a source region, a drain region, and a channel region having a
void to provide a barrier to lines of force to reduce leakage current.

2. The apparatus of claim 1 wherein said void is located substantially in a center of
said channel region.

3. The apparatus of claim 1 wherein said void is approximately 50 nm across.

4. The apparatus of claim 3 wherein said void is located at a depth of approximately
1000 angstroms in said channel region.

5. The apparatus of claim 1 further comprising a gate region.

6. The apparatus of claim 5 wherein said void is located near an edge of said channel
region adjacent to said source region.

7. The apparatus of 6 further comprising a void located near an edge of the channel
region adjacent said drain region.

1 8. An apparatus comprising:
2 a gate region; and
3 a substrate having a source region, a drain region, a channel region, and a void
4 below said source region to provide a barrier to lines of force to reduce leakage current.

1 9. The apparatus of claim 8 wherein a void is located below said drain region.

1 10. The apparatus of claim 9 wherein said source region and said drain region are
2 under compressive stress.

1 11. The apparatus of claim 8 wherein said source region is under tensile stress.

1 12. The apparatus of claim 8 wherein said drain region is under compressive stress.

1 13. The apparatus of claim 8 wherein said gate region is polysilicon.

1 14. The apparatus of claim 8 wherein said gate region is metal.

- 1 15. An apparatus comprising
2 a gate region having a void to provide a barrier to lines of force to reduce leakage
3 current; and
4 a substrate having a source region, a drain region, and a channel region.

- 1 16. The apparatus of claim 15 wherein said void is located at a depth of approximately
2 1000 angstroms in said gate region.

- 1 17. The apparatus of claim 15 wherein said gate region is polysilicon.

- 1 18. The apparatus of claim 15 wherein said gate region is metal.